

NON-PUBLIC?: N
ACCESSION #: 9001250351
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Indian Point Unit No. 2 PAGE: 1 OF 5

DOCKET NUMBER: 05000247

TITLE: Reactor Trip Caused by Low Turbine Oil Pressure
EVENT DATE: 12/13/89 LER #: 89-013-00 REPORT DATE: 01/12/90

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: John D. Koutouzis, Licensing Spec. TELEPHONE: (914) 526-5129

COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: CB COMPONENT: VLV MANUFACTURER: C635
REPORTABLE NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: No

EXPECTED SUBMISSION DATE: 01/12/90

ABSTRACT:

On December 13, 1989, while the plant was at 100% power, a momentary decrease in main turbine governor oil pressure, brought about by operator action actuated the "turbine tripped" logic (turbine still reset) which in turn generated a reactor trip signal. The subsequent reactor trip generated a turbine trip signal causing a turbine and generator trip. Following the trip and data review it was determined that Reactor Coolant System letdown isolation did not occur, and that loop 23 pressurizer spray flow was unexpectedly reduced to an insufficient amount due to an incorrect bypass valve position, causing lower than expected temperatures in the associated spray line.

END OF ABSTRACT

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PLANT AND SYSTEM IDENTIFICATION:

Westinghouse 4-loop pressurized water reactor

IDENTIFICATION OF OCCURRENCE:

Low turbine control oil pressure caused reactor and turbine trip

REPORTABILITY DETERMINATION DATE:

December 13, 1989

REPORT DUE DATE:

January 12, 1990

REFERENCES:

Significant Occurrence Report, 89-731

PAST SIMILAR OCCURRENCE:

None

DESCRIPTION OF OCCURRENCE:

On December 13, 1989 at 0120 hours, Unit No. 2 was operating at 100% power. Operators were completing a turbine oil filter replacement begun on the previous shift. The filters were installed and the procedure for placing the clean filters in standby was continuing. During the process of filling the newly replaced filter canisters using the inlet 3-way valve, as per procedure, the operator experienced resistance when attempting to place the inlet 3-way valve in the midposition for filling. The operator applied additional force on the inlet 3-way valve in an attempt to overcome the differential pressure across the valve. At this time the valve moved suddenly to the midposition. The rapid valve motion caused an immediate decrease in the supply pressure to the on-line filters which resulted in a drop in control oil pressure at the turbine control system. The drop in control oil pressure actuated the pressure switches that sense turbine oil pressure and generated a "turbine tripped" signal to the reactor protection trip logic. At this time the turbine had not actually tripped. The reactor protection system subsequently tripped the reactor. The reactor trip in turn generated a turbine trip signal which then initiated a turbine and generator trip.

DESCRIPTION OF OCCURRENCE: (continued)

Following event review and operator interviews it was determined that

1) There was insufficient flow in the reactor coolant loop No. 23 pressurizer spray line, which caused the temperature of the fluid in the spray line to be lower than expected. Spray and temperature via this path was subsequently re-established automatically through the pressurizer pressure control system and the spray valve bypass flow was manually adjusted to provide appropriate by-pass flow.

2) The Reactor Coolant System letdown had failed to isolate flow on low pressurizer level, which caused a level decrease in excess of design. The incomplete letdown isolation was known to be a potential problem due to letdown valve malfunction. Additional charging pumps were started by operator action and pressurizer level was restored to normal.

ANALYSIS OF OCCURRENCE:

This event is being reported under the requirements of 10 CFR 50.73(a)(2)(iv), which states that any event or condition that results in manual or automatic actuation of any Engineered Safety Feature including the Reactor Protection System is a reportable event.

Shortly after the turbine was placed on line, oil filters in the turbine lube oil system developed a high differential pressure, necessitating filter swapping and filter cartridge replacement. During the period when filter cartridge replacement was being accomplished the unit was synchronized, supplying system load. The procedure for filter replacement had been previously revived by the shift supervisor and discussed with the control room operators and appropriate plant personnel. The control room operators were prepared for a potential oil system fluctuation which could cause a turbine generator load change. Following filter cartridge installation and assembly of the filter canister, the operator began the process of refilling the empty filter canisters with oil in order to place them in the standby mode.

Proceeding with the refill procedure, which required the use of the inlet 3-way ball valve, the operator released the latch and began to move the inlet valve to the midposition to admit oil to the off-line filter bank. The operator experienced resistance moving the valve due to the high differential pressure across the valve. As the operator

ANALYSIS OF OCCURRENCE: (continued)

applied additional force to overcome the resistance, the valve moved suddenly which caused a rapid drop in supply pressure due to the sudden high flow to the air filled filters being placed in standby. The drop in oil pressure was sensed by pressure switches in the turbine control oil system. These switches actuated, satisfied the "turbine tripped" logic and generated a reactor trip signal. The reactor protection system actuated and tripped the reactor. The reactor trip in turn generated a turbine trip signal that tripped the turbine and generator.

Although pre-job briefings were performed and the potential for oil system pressure fluctuation was discussed, all shift operators were not aware of the full scope of the inlet 3-way valve characteristics and associated ramifications. Prior to initiating the oil filter replacement pursuant to the procedure, the absence of such information was not specifically brought to the attention of management for appropriate enhancements of procedures and training.

The failure of the letdown isolation valve and subsequent decrease in pressurizer level was mitigated by operator action taken in accordance with emergency operating procedures which required that additional charging pumps be placed in operation. The pressurizer spray line isolation, which caused the line to be cooler than expected, was subsequently reheated by automatic action of the pressurizer pressure control system, which in turn caused modulation of the spray valves. Throughout the event, both spray valves remained operable and under control. At no time did the temperature in the affected spray line approach a temperature limitation.

CAUSE OF OCCURRENCE:

Inadequate procedural guidance and training to compensate for lube oil system design limitations, and a lack of feedback to management as to the extent of the deficiencies encountered by operators.

CORRECTIVE ACTION:

Management has stressed the importance of timely action in response to letdown isolation failure and has scheduled valve repair for the next plant shutdown.

The spray valve bypass flow control valve was adjusted to permit adequate spray line bypass flow, with spray valve shut, to preclude spray line cooling.

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CORRECTIVE ACTION: (continued)

Operating procedures will be revised to include cautions regarding filter inlet 3-way valve operation, clearer directions to fill empty filter canisters, and routing of oil vented from filter canisters.

A design enhancement has been initiated for the filter system to provide a mechanism to fill, vent and pressurize empty canisters prior to placing them in service. The importance of procedure problem feedback and use of the Indian Point feedback system for procedure enhancement has been stressed to all operating personnel.

ATTACHMENT 1 TO 9001250351 PAGE 1 OF 1

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Vice President

Consolidated Edison Company of New York, Inc.
Indian Point Station
Broadway & Bleakley Avenue
Buchanan, NY 10511 January 12, 1990
Telephone (914) 737-8116

Re: Indian Point Unit No. 2
Docket No. 50-247
LER 89-13-00

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

The attached Licensee Event Report LER 89-13-00 is hereby submitted in accordance with the requirements of 10 CFR 50.73.

Very truly yours,

Attachment

cc: Mr. William Russell
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